

# Adjustable chairs reduce shoulder and neck pain in garment workers

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Adjustable-height chairs with ergonomically curved seats can significantly reduce neck and shoulder pain in garment workers, according to a new study in the April 20 issue of *Spine*.

The study shows that chair design affects neck and shoulder pain among garment workers -- and possibly in other laborers engaged in visually intensive manufacturing work, the researchers say.

The study was led by David Rempel, MD, MPH, director of the ergonomics program at San Francisco General Hospital and professor of medicine at the University of California, San Francisco; and Beate Ritz, MD, PhD, associate professor of epidemiology, at University of California, Los Angeles.

According to the authors, garment workers typically work in a seated position for seven to 10 hours per day, using their hands to manipulate cloth or to complete fine-motor tasks while sewing. The work is visually intensive, so workers often lean forward and hold their arms and shoulders up. In 2000, the garment industry employed 11 million workers worldwide. Approximately 350,000 of these workers were in the United States. Los Angeles is the home of the largest garment production center in the country.

"Garment workers have not been the focus of many studies, despite the fact that they face important occupational health risks," Rempel explained. "Their work is physically demanding, especially on the upper

extremities and neck."

In an earlier pilot study, Rempel and colleagues from UCSF tested a number of interventions, including a chair they designed, to relieve neck and shoulder pain in garment workers in the Bay Area.

The custom-designed chair is height adjustable, has no wheels, in order to ensure the garment workers stay seated firmly in place, has no arm supports to interfere with movements, and has a seat pan that slants slightly downward to support forward-leaning postures. The chair is also upholstered with a breathable cloth and foam appropriate for the high-temperature environment of the garment shop floor. The researchers found that the custom-made chair reduced risk factors for shoulder and neck pain better than the other interventions tested.

In the current study, the researchers evaluated the effectiveness of the custom-made chair in comparison to two more traditional chairs -- an adjustable height, flat seat pan chair, and a fixed-height, flat seat pan chair commonly used by garment workers in the United States.

For this study, they recruited 277 sewing machine operators with neck and shoulder pain who worked at least twenty hours a week in one of 13 garment shops in the Los Angeles area.

All subjects were given miscellaneous items that may or may not aid in reduction of pain, including table-top storage boxes for work tools, side tables to help manage cloth, task lamps and reading glasses. These items could be used or rejected at will.

The subjects were then randomly assigned to receive one of the three types of chairs. Results showed participants who sat in an adjustable height, flat-seat pan chair experienced a reduction in pain of 0.14 points on a 0-5 scale per month compared to a control group, while those who

received the custom-designed chair experienced a decline in pain of 0.34 points per month compared to those in the control group. Results also showed the effect was more prominent in thin workers and in those whose workloads involved more hand and arm work.

"Both types of height adjustable chairs significantly decreased neck pain among the garment workers over a four-month period, but the curved seat pan provided more benefit than the flat seat pan chair," Rempel said. "These findings indicate that owners of sewing companies should consider providing an adjustable height chair with a forward sloped seat pan for their employees as a way of reducing pain and loss of trained workers due to impaired health."

In order to evaluate the chair design in other industrial settings, the research group is currently looking for other workplaces with hand-intensive manufacturing jobs to study.

"We feel strongly that garment workers and other manufacture laborers are a particularly important group to evaluate and help because they are largely an immigrant population without access to health care or workers' compensation," added Rempel.

Source: University of California - San Francisco

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